

Notice of Allowability

Application No.

09/849,803

Examiner

Gims S. Philippe

Applicant(s)

HOURUNRANTA, ARI

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on December 23, 2004.
2. ☒ The allowed claim(s) is/are 2-4,6-19,21-29,32-34,36-41,45-47,49-53 and 67-69.
3. ☒ The drawings filed on 18 July 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 050305.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Henry Steckler on May 3, 2005.

The application has been amended as follows:

Claim 20. Canceled

Claim 21, line 1, replace "20" by --67--;

Claim 22, lines 1, replace "20" by --67--;

Claim 23, line 1, replace "20" by --67--;

Claim 24, line 1, replace "20" by --67--;

Claim 67, line 5, after "information" insert -- for said image block, said inter-coded image information--;

Claim 67, line 11, replace "examiner" by --examined--;

Claim 68, line 5 after "block", insert --, -- ;

Claim 68, line 44, after "range," insert --and--;

Claim 69, line 5, after "information" insert -- for said image block, said inter-coded image information--;

21. (Currently Amended) A method according to claim 67, wherein the filtering is performed by thresholding the pixel error values of said at least one luminance prediction error block and said at least one chrominance prediction error block.

22. (Currently Amended) A method according to claim 67, wherein the filtering is performed by high-pass filtering the pixel error values of said at least one luminance prediction error block and said at least one chrominance prediction error block.

23. (Currently Amended) A method according to claim 67, wherein a spatial resolution of said at least one luminance prediction error block of said macroblock is greater than a spatial resolution of said at least one chrominance prediction error block said macroblock, wherein down-sampling of the pixel error values of said at least one luminance prediction error block performed so as to reduce the spatial resolution of said at least one luminance prediction error block to correspond with the spatial resolution said at least one chrominance prediction error block of said macroblock.

24. (Currently Amended) A method according to claim 67, wherein a spatial resolution of said least one luminance prediction error block said macroblock is greater than a spatial resolution of said at least one chrominance prediction error block of said macroblock, wherein up-sampling of pixel error values of said at least one chrominance prediction error block performed so as to increase the spatial resolution of said at least

one chrominance prediction error block to correspond with the spatial resolution of said at least one luminance prediction error block said macroblock.

67. (Currently Amended) A method for detecting errors in an image signal, in which the image signal is produced by dividing an image into image blocks, and a coding stage is performed in which at least predictive coding is performed on an image block to produce inter-coded image information for said image block, said inter-coded image information comprising at least one prediction error block containing prediction error information, and a decoding stage is performed to recover prediction error information contained in said at least one prediction error block, wherein a prediction error block check is performed in which prediction error information contained in said at least one prediction error block is examined to detect errors in the inter-coded image information for the image block, said inter-coded image information for the image block comprises a macroblock comprising at least one luminance prediction error block containing prediction error information relating to a luminance component of the image signal and at least one chrominance prediction error block containing prediction error information relating to a chrominance component of the image signal, said image signal comprising at least one chrominance component, the prediction error information contained in said at least one luminance prediction error block and said at least one chrominance prediction error block of said macroblock comprise pixel error values and said pixel error values of said at least one luminance prediction error block and said pixel error values of said at least one chrominance prediction error block are filtered to determine pixel

error values of said at least one luminance prediction error block and said at least one chrominance prediction error block which are significant with respect to a threshold value and a third comparison stage is performed in which significant pixel error values comprised by said at least one chrominance prediction error block of said macroblock are compared with pixel error values at corresponding locations in said at least one luminance prediction error block, wherein if the number of locations for which a pixel error value in said at least one chrominance prediction error block is significant with respect to said threshold value and a pixel error value at a corresponding location in said at least one luminance prediction error block is not significant with respect to said threshold value exceeds a fourth value range, the inter-coded image information for the image block is considered to contain at least one error.

68. (Currently Amended) A terminal comprising means for receiving an image signal, the image signal having been formed by dividing an image into image blocks and performing a coding stage using at least predictive coding on an image block to produce inter-coded image information for the image block, said inter-coded image information comprising at least one prediction error block containing prediction error information, and decoding means for recovering prediction error information contained in said at least one prediction error block, wherein the terminal also comprises means for performing a prediction error block check in which prediction error information contained in said at least one prediction error block is examined to detect errors in the inter-coded image information for the image block, means for producing macroblocks

comprising at least one luminance prediction error block containing prediction error information relating to a luminance component of the image signal and at least one chrominance prediction error block containing prediction error information relating to a chrominance component of the image signal, said image signal comprising at least one chrominance component, means for performing a macroblock check if no errors are detected by said means for performing a prediction error block check, said means for performing a macroblock check comprising means for examining a correspondence between prediction error information relating to a luminance component of the image signal and prediction error information relating to at least one of said at least one chrominance component of the image signal to detect errors in the inter-coded image information for the image block, wherein said means for performing a macroblock check further comprise:

means for performing a second comparison stage which a second reference value calculated on the basis of said at least one chrominance prediction error block of said macroblock is compared with a second value range; means for calculating a difference on the basis of said at least one luminance prediction error block and said at least one chrominance prediction error block of the macroblock said second reference value falls outside said second value range; means for comparing said difference with a third value range; means for indicating that the inter-coded image information for the image block is considered contain least one error if said difference falls outside said third value range, and means for setting said second reference value equal to said first reference value calculated for said at least one chrominance prediction error block of said macroblock

by said means for performing a prediction error block check.

69. (Currently Amended) A terminal comprising means for receiving an image signal, the image signal having been formed by dividing an image into image blocks and performing a coding stage using at least predictive coding on an image block to produce inter-coded image information for the image block, said inter-coded image information comprising at least one prediction error block containing prediction error information, and decoding means for recovering prediction error information contained in said at least one error block, wherein the terminal also comprises means for performing a prediction error block check in which prediction error information contained said at least one prediction error block is examined to detect errors in the inter-coded image information for the image block, a terminal comprising means for receiving an image signal, the image signal having been formed by dividing an image into image blocks and performing a coding state using least predictive coding on an image block to produce inter-coded image information for the image block said inter-coded image information comprising at least one prediction error block containing prediction error information, and decoding means for recovering prediction error information contained in said at least one prediction error block, wherein the terminal also comprises means for performing a prediction error block check in which prediction error information contained in said at least one prediction error block is examined to detect errors in the inter-coded image information for the image block, means producing macroblocks comprising at least one luminance prediction error block containing prediction error information

relating to a luminance component of the image signal and at least one chrominance prediction error block containing prediction error information relating to chrominance component of the image signal, said image signal comprising at least one chrominance component, wherein the prediction error information contained said least one luminance prediction error block and said at least one chrominance prediction error block of said macroblock comprise pixel error values and the terminal further comprises: means for filtering said pixel error values of said at least one luminance prediction error block and said at least one chrominance prediction error block of said macroblock to determine pixel error values of said at least one luminance prediction error block and said at least one chrominance prediction error block which are significant with respect to a threshold value; means for performing a third comparison stage in which significant pixel error values comprised by said at least one chrominance prediction error block are compared with pixel error values at corresponding locations in said at least one luminance prediction error block; and means for indicating that the inter-coded image information for the image block considered contain at least one error if the number of locations for which a pixel error value in said at least one chrominance prediction error block is significant with respect to said threshold value and a pixel error value a corresponding location in said at least one luminance prediction error block is not significant with respect said threshold value exceeds a fourth value range.

2. The following is an examiner's statement of reasons for allowance:

Allowable Subject Matter

After a further search and a thorough examination of the present application and in light of the Applicant's arguments and in light of the prior art made of record, claims 2-4, 6-19, 21-29, 32-34, 36-41, 45-47, 49-53, and 67-69 are found to be in condition for allowance.

Reasons for Allowance

3. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The claims are allowable over the prior art of record since the cited reference taken individually or in combination fails to particularly disclose a method for detecting errors in an image signal wherein pixel error values of one luminance prediction error block and pixel error values of said at least one chrominance prediction error block are filtered to determine pixel error values of said at least one luminance prediction error block and said at least one chrominance prediction error block which are significant with respect to a threshold value and a third comparison stage is performed in which significant pixel error values comprised by said at least one chrominance prediction error block of said macroblock are compared with pixel error values at corresponding locations in said at least one luminance prediction error block, wherein if the number of locations for which a pixel error value in said at least one chrominance prediction error block is significant

with respect to said threshold value and a pixel error value at a corresponding location in said at least one luminance prediction error block is not significant with respect to said threshold value exceeds a fourth value range, the inter-coded image information for the image block is considered to contain at least one error.

It is noted that the closest prior art of record (Karczewicz et al. US Patent no. 6735249) teaches a method for detecting errors in an image signal, however, Karczewicz et al. fails to particularly teach or suggest *"performing a comparison in which significant pixel error values comprised by one chrominance prediction error block of a macroblock are compared with pixel error values at corresponding locations in said at least one luminance prediction error block, wherein if the number of locations for which a pixel error value in said at least one chrominance prediction error block is significant with respect to said threshold value and a pixel error value at a corresponding location in said at least one luminance prediction error block is not significant with respect to said threshold value exceeds a fourth value range, the inter-coded image information for the image block is considered to contain at least one error."* as specified in the claims.

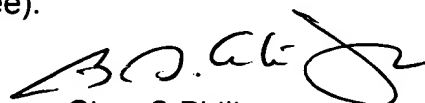
Conclusion

4. Any comments considered necessary by applicant must be submitted no later than the payment of issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons for Allowance".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gims S. Philippe whose telephone number is (571) 272-7336. The examiner can normally be reached on M-F (9:30-7:00) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris S. Kelley can be reached on (571) 272-7331. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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May 4, 2005